

REMARKS

THE CLAIMS

Claims 1-41 have been examined.

Claims 1-22, 32, and 35-36 have been canceled herein.

Independent claim 23 as amended now recites:

A method of forming an anode for an alkaline cell having an anode cavity therein, comprising the step of:

a) forming a wet mixture comprising zinc particles, a binder comprising polyvinylalcohol and a gelling agent, and water;

a.1) inserting said wet mixture into a mold cavity;

a.2) applying pressure to said wet mixture in said mold cavity thereby compacting said wet mixture within said mold cavity;

a.3) ejecting said compacted wet mixture from said mold cavity thereby producing a molded wet mixture having a molded shape, whereupon said molded wet mixture retains its molded shape;

b) drying said molded wet mixture to evaporate water therein and thereby producing a dry solid mass comprising said zinc particles, said solid mass retaining its molded shape;

c) inserting said solid mass into the anode cavity of an alkaline cell; and

d) adding a fluid to the anode cavity whereby said fluid is absorbed by said solid mass, said fluid activates said gelling agent, and thereby forms said anode.

Steps a.1, a.2, and a.3 have been added by amendment herein.

Step a.2 specifically recites that pressure is applied to the wet mixture in the mold cavity thereby compacting the wet mixture in said mold cavity.

Step a.3 recites the step of ejecting the compacted wet mixture from the mold cavity thereby producing a molded wet mixture having a molded shape, whereupon said molded wet mixture retains its molded shape

A new dependent claim 76 has been added, which recites the method of claim 23, wherein the pressure applied to said wet mixture in step a.2 corresponds to a force of between about 10 and 300 pounds applied by a plunger to said wet mixture in said mold cavity being cylindrical and having a diameter between about 3 and 7 mm, thereby compacting said wet mixture within said mold cavity. (Support in the specification appears at p. 19, lines 2-8 and Figs. 1 and 3B) The representative mold cavity 630 (Fig. 3B) can be cylindrical as in anode cavity 813 (Fig. 1).

Additionally the phrase "dimensionally stabilized" which appeared in original claim 23 has been replaced with language that the mass "retains its molded shape". Thus, amended claim 23 now reflects that both the molded wet mixture upon being ejected from the mold cavity (step a.3) has the property that it retains its shape, and the dry solid mass (step b) resulting from drying the molded wet mixture also retains its shape. Support appears in the specification, for example, at p. 6, lines 16-18 and p. 10, lines 6-10.

Support for step a.2 of .."applying pressure to said wet mixture in said mold cavity thereby compacting said wet mixture within said mold cavity" is recited in the specification:

"The wet zinc paste 815a is molded under pressure by applying a pressure to the plunger top 640 thereby injecting plunger 645 into die cavity 630, for example, in 2-3 seconds, causing the wet zinc paste 815a to become compacted and molded into the cavity 630 shape. Typically, a moderate force can be applied to the plunger, desirably under about 400 pounds force, typically between about 10 and 300 pounds. Such force is applied in this manner to the exposed surface of the wet zinc paste 815a by a stroke of plunger 645, for die cavities 630 having diameter, for example, between about 3 and 7 mm." (Specification, p. 19, lines 2-8)

The molded wet mixture (molded wet zinc paste) is compacted within the mold die and when removed from the mold die, it has the property that it "retains it shape". This is clearly recited, for example in the specification as follows:

An aspect of the invention is directed to preparing an aqueous wet zinc paste and molding the paste in the approximate shape of the anode cavity for an alkaline cell. This can be done conveniently by applying the wet paste into a steel, ceramic or plastic die having a cavity therein in the approximate shape of the cell's anode cavity. The paste fills the cavity under pressure and thereby assumes the cavity shape. The paste can be pressure- molded in the die cavity under ambient temperatures for a short time, typically 2-3 seconds. The paste molded in this manner forms a wet zinc mass (wet preform) which is readily removable from the die. The wet zinc mass (wet preform) has sufficient structural integrity so that it can stand alone outside of the die while retaining its molded shape. The stand alone wet preform is then heated to evaporate water, thereby resulting in a solid, dried, porous zinc mass (solid preform) which can be stored until the cell is ready for assembly. (Specification, p. 6, lines 6-21)

THE INVENTION

Normally a slurry comprising zinc or zinc alloy particles, gelling agent, and aqueous potassium hydroxide electrolyte (and optional surfactants) is made and pumped into the anode cavity of the conventional alkaline cell. Such "zinc anode slurry" or "gelled slurry" as it is commonly referenced in the art is in a semi gelled state and has the consistency of a heavy fluid with zinc particles dispersed therein. The fluid may therefore be pumped or dispensed as a heavy liquid at ambient temperatures. However, since the fluid is in a semi gelled state there are difficulties associated with pumping such heavy fluid into small or irregular shaped anode cavities. For example, the dispensing nozzle and associated pumping equipment can become clogged and has to be periodically cleaned. There are practical limits to how small the dispensing nozzle can be so there are more potential problems associated with dispensing the conventional zinc anode slurry into small or irregularly shaped anode cavities.

Applicant has discovered that a dry solid porous mass of anode material comprising the necessary zinc particles may be formed into the shape of the anode cavity, typically cylindrical, (but of any desired shape) and then stored away until needed. During cell assembly the dry solid porous mass of anode material is simply inserted into the anode cavity of the cell. Then alkaline electrolyte is added after the dry solid porous mass is inserted into the cell's anode cavity, whereupon the electrolyte is immediately absorbed into the porous mass, which expands thereby and forms a gelled slurry-like anode mixture. This technique has the advantage of forming the anode into a dry molded shape, without concern for the need to pump a "gelled anode slurry" mixture into a small or irregular shaped anode cavity. Thus, the dry molded porous mass (solid preform) comprising the

necessary zinc particles therein, is simply inserted into the cell's anode cavity. Aqueous electrolyte, typically aqueous potassium hydroxide, is then added and absorbed by the molded dry mass to form the active gelled anode mixture (active anode slurry equivalent). Thus the need to use pumping equipment for the conventional gelled anode slurry mixture is avoided.

Applicant has discovered that by first forming a wet zinc paste mixture comprising zinc particles, binder material comprising polyvinylalcohol, gelling agent, and water, such paste mixture may be inserted into a die cavity mold. The mixture is not yet in a gelled or semi gelled state, since there is no alkaline electrolyte yet present in the mixture to activate the gelling agent. The paste mixture may be pressure molded within cavity mold at ambient temperature into any desired shape and size. As described in detail in the application (supra), a plunger under pressure may impact the exposed surface of the wet anode paste mixture in the die cavity thereby compacting the wet paste mixture within the die cavity mold. The force of the plunger on the wet anode paste may typically be between about 10 and 300 pounds for representative die cavity diameter between about 3 and 7 mm. (Specification at p. 19, lines 6-11.) The compacted paste is thus molded to the shape of the mold cavity, which may be cylindrical or of any other shape. When the molded wet mixture (molded wet zinc paste) is removed from the mold cavity, it was discovered that the molded paste mixture could be left free standing in ambient temperature, that is, it retained its shape. Thus, since the molded wet paste mixture "retains its shape", it could be readily passed, in free standing form, into an oven and dried as described in the application to evaporate water therein and form the dry porous mass. (Specification, e.g., at p. 8, line 29 to p. 9, line 9.) The dry porous mass also "retains its

shape" and may be stored until ready for use for insertion into the alkaline cell anode cavity.

It could not be expected that a wet mixture of zinc particles could be pressure molded into a free standing wet molded mixture, which retains its shape. As is known, liquids and paste mixtures are normally not compressible. And even if compressible to some degree, liquids and wet zinc mixtures, per se, would not be expected to be molded into a free standing form, that is to retain its molded shape, simply by utilizing Applicant's pressure molding technique.

It is theorized that as the wet paste mixture of the present invention is compacted within the mold cavity under the pressure exerted by the plunger, such compaction causes a closer physical interaction between the zinc particles and the polyvinylalcohol molecules present within the wet paste, though the zinc and polyvinylalcohol remain unreacted. Such physical interaction is believed to increase the cohesive forces between the zinc particles and polyvinylalcohol binder making possible the resulting molded free standing, wet paste product, which retains its shape. The interaction of the polyvinylalcohol 824 and zinc particles 822 may be seen in the photomicrograph of Fig. 4.

THE REJECTION

The drawings have been objected because reference character 850 in Fig. 1, and 125 in Fig. 2 are not found in the written description. Applicant has amended the specification herein to appropriately reference these two numbers. This does not constitute new matter, since the features as referenced are clearly shown in the drawings. The objection to the drawings is believed cured and withdrawal of these objections is requested.

Claims rejections of various claims within claims 1-22 under 35 USC 112, 35 USC 102 and/or 35 USC 103 are rendered moot in view of the cancellation of claims 1-22 herein.

Claims rejections of claims 1,3-6,8,10-21 as provisionally rejected under 35 USC 101 as claiming the same invention (same invention double patenting) as that of claims 1,3-7,9-20 of copending Application No. 10/613,681 is rendered moot in view of the cancellation of claims 1-22 herein.

Claims rejection of claims 1-22 on the basis of obvious type double patenting is rendered moot in view of the cancellation of claims 1-22 herein.

Claims 23-41 have been rejected on the basis of obvious type double patenting as being unpatentable over claims 1-39 of copending application No. 10/613,681. In view of the amendment to independent claim 23 herein it is believed that the basis for the obvious type double patenting rejection has been overcome and withdrawal of the rejection is requested. However, Applicant is prepared to file a Terminal Disclaimer if the Examiner does not withdraw this double patenting rejection, as the two Applications are commonly owned as shown by Assignment of the subject Application 10/613,686 at Reel 014283/ Frame 0629 and Assignment of Application 10/613,681 at Reel 014297/ Frame 0668.

Claims 35 and 36 containing specific trademark names have been canceled. Thus, the rejection of claims 35 and 36 under 35 USC 112 for the inclusion of trademark names is rendered moot.

Claim 23 is rejected under 35 USC 112 for use of the term "such as" rendering the claim indefinite, for not having antecedent basis in the claim for the phrase "the anode cavity," and for use of the term "dimensionally stabilized". Claim 23 has

been amended herein deleting the term "such as". Claim 23 has been amended to include antecedent basis in the preamble for "anode cavity". The term "dimensionally stabilized" as recited in claim 23 has either been deleted or replaced with the phrase "mass retaining its shape". Thus the rejections of claim 23 under 35 USC 112 are now believed to be cured and withdrawal of this basis of rejection is requested.

Claims 23-25, 28-30, 32 and 40-41 are rejected under 35 USC 103(a) as being unpatentable over Kosta U.S. 3,784,406 in view of either JP 48-012690 (JP '690) or JP patent 55(1980)-30,260 (JP '260) and U.S. 6,251,539 (Byrs) and either U.S. patent 4,563,404 (Bahary) or U.S. patent 5,401,590 (Chalilpoyil).

The Examiner states that Kosta discloses a method of forming an anode for an alkaline cell comprising: forming a mixture comprising zinc particles, polymeric binder dispersed in water which is subsequently dried (col. 5, lines 1-12 as applied to claim 23). Kosta discloses a method whereby a wet dispersion containing zinc particles and polymeric binder is dispersed in water. This wet dispersion is first applied from the surface of an application roller 600 to the wiping surface 222 of a patch roller 220. The patch roller 220 has depressions or indentations 224 intermittently spaced along its surface. These indentations 224 do not pick up any of the wet dispersion from application roller 600. Thus a series of segmented or separated wet dispersion patches appear on the wiping surface 222 of the patch roller 220. A continuous carrier strip 50 is fed so that it passes into the path of the rotating patch roller 220 wherein the segments of the wet dispersion are **wiped** from the surface of the patch roller onto the carrier strip. This produces a series of wet electrode deposits (wet masses) 20 on the carrier strip 50. After the wet electrode

deposits have been applied to the carrier strip in this manner they are passed to a drying oven whereby the liquid water may be removed leaving behind a series of solid electrode masses.

The Examiner states that absent sufficient clarity with respect to (Applicant's) term "dimensionally stabilized mass" it is held that the prior art of Kosta upon drying produces a relative "dimensionally stabilized mass", for example, in Fig. 2 of Kosta each (wet) electrode deposit 20 is held to be a dimensionally stabilized mass. The Examiner states that Kosta further teaches that the electrode formulation may additionally contain, if desired small amount of additional ingredients used for such purposes as maintaining uniform dispersion of active material particles during electrode construction, aiding the diffusion of battery electrolyte through the pores of the finally constructed electrodes, controlling viscosity during processing, controlling surface tension of battery electrolyte in the resultant electrode, or controlling pot life. The Examiner states Kosta discloses that the electrode formulation preferably also contains a binder material which after the liquid is removed, holds the active particles together and binds, bonds, or otherwise secures the particles to the carrier strip.

The Examiner indicates further that Kosta discloses passing the wet masses to a drying oven and heating the masses to produce a dried solid form. Thus, the examiner indicates that the electrode of Kosta is a solid porous mass comprising the zinc particles.

The Examiner admits that Kosta does not disclose the use of polyvinylalcohol as a binder material and in fact polyvinylalcohol is nowhere mentioned in this reference. The Examiner also admits that Kosta does not teach inserting the dried electrode mass into

the anode cavity of an alkaline cell and of subsequently adding alkaline electrolyte thereto.

Claim 31 is rejected under 35 USC 103(a) as being unpatentable over Kosta ('406) in view of either JP '690 or JP '260 and U.S. patent 6,251,539 (Brys) and either U.S. patent 4,563,404 (Bahary) or U.S. patent 5,401,590 (Chalilpoyil) as applied to claim 23 above, and further in view of U.S. patent 5,538,813 (Li).

The Examiner states that the difference between claim 31 and Kosta is that Kosta does not expressly teach of the polymeric binder being polyvinylalcohol, i.e., PVA of a molecular weight between 85000 and 146000.

Claim 37 is rejected under 35 USC 103(a) as being unpatentable over Kosta in view of either JP '690 or JP '260 and U.S. patent 6,251,539 (Brys) and either U.S. patent 4,563,404 (Bahary) or U.S. patent 5,401,590 (Chalilpoyil) as applied to claim 23 above, and further in view of U.S. patent 5,240,793 (Glaeser).

The Examiner states that the differences between claim 37 and Kosta is that Kosta does not expressly teach of the anode mixture further comprising indium in total amount between 200 ppm and 1000 ppm of the zinc. The Examiner states Glaeser discloses that adding indium in a preferred range from 100-1000 ppm of the zinc amalgam will significantly reduce the lead content in the anode and decrease the toxicity of the zinc anode.

Claims 38-39 are rejected under 35 USC 103(a) as being unpatentable over Kosta in view of either JP '690 or JP '260 and U.S. patent 6,251,539 (Brys) and either U.S. patent 4,563,404 (Bahary) or U.S. patent 5,401,590 (Chalilpoyil) as applied to

claim 23 above, and further in view of either U.S. patent 4,195,120 (Rossler) or U.S. patent 4,777,100 (Chalilpoyil '100).

The Examiner states that the differences between claims 38-39 and Kosta are that Kosta does not expressly teach of the mixture further comprising a surfactant (claim 38), the surfactant being an organic phosphate ester (claim 39). The Examiner states the use of organic phosphate ester surfactants in anode mixtures is well known in the art as shown by either Rossler or Chalilpoyil '100 and that hydrogen evolution in cells having zinc anodes is reduced or eliminated by incorporating in the cell a surfactant which is a complex phosphate ester of a surfactant of the ethylene oxide-adduct type.

ARGUMENTS AGAINST THE REJECTION

I. Argument Against Reference Kosta U.S. Patent 3,784,406

KOSTA DOES NOT CONTEMPLATE APPLICANT'S STEP OF INSERTING A WET ZINC MIXTURE INTO A MOLD CAVITY AND APPLYING PRESSURE TO THE WET MIXTURE THEREIN TO COMPACT THE MIXTURE AND EJECTING THE COMPACTED WET ZINC MIXTURE FROM THE MOLD CAVITY, RESULTING IN A MOLDED WET ZINC MIXTURE WHICH RETAINS ITS SHAPE

Kosta transfers his wet zinc mixture from applicator roller 600 to patch roller 220 and then a wiping action is applied to the surface of patch roller 600 thereby wiping patches of the wet zinc mixture from the patch roller 220 onto continuous carrier strip 50. Since there are indentations 224 along the surface of patch roller 600, the wet deposits 20 are separated from each other by the length of indentations 224 on the patch roller surface. The wiping action appears to be the result of blade-like action of back bar assembly 400 which scrapes patches of wet zinc mixture onto the continuous carrier strip 50 as it passes between assembly 400 and the surface of patch roller 220.

Kosta is satisfied with forming patches of wet deposits 20. He does not contemplate forming the patches of the wet zinc mixture into any particular shape other than in the form of wet electrode deposits 20 as shown in simple patch-like or rectangular shape in Figs. 1 and 2. The only other techniques Kosta mentions for forming the wet deposits 20 besides the wiping method is possibly by use of other roller systems, spraying, and brushing. (col. 3, lines 34-37). The wet deposits 20 are then dried in an oven to form dried solid electrode deposits of same patch-like shape.

Kosta does not disclose or contemplate any methods of forming wet deposits into shapes other than rectangular patches as shown in Figs. 1 and 2. By contrast Applicant using the described pressure technique can mold the wet zinc mixture into essentially any desired shape. **It should be clear that Kosta does not disclose any pressure molding techniques for forming the wet zinc mixture deposits 20. Specifically, there is no disclosure or suggestion in Kosta of inserting the wet zinc mixture into a mold cavity and applying pressure to the wet zinc mixture therein as Applicant has described, thereby resulting in a molded wet zinc mixture which has the property of retaining its shape when ejected from the mold cavity.**

Kosta does not disclose the use of Applicant's binder comprising polyvinyl alcohol as a component of the wet zinc mixture. By contrast Applicant has determined by experimentation that polyvinylalcohol has special properties which makes it desirable for use as binder material for zinc particles in a wet zinc mixture subjected to pressure molding effected by the action of a plunger pressed against the wet zinc mixture. That is, there appears to be a physical interaction between the polyvinylalcohol

and zinc particles which takes place and increases as pressure is applied to the wet zinc mixture. This forms a molded wet mixture which takes on the shape of the mold cavity and which upon ejection from the mold cavity "retains its shape" so that it may subsequently be passed to an oven for drying into a solid electrode mass of same shape. Applicant then inserts the solid dry electrode mass into an alkaline cell anode cavity and adds alkaline electrolyte. The polyvinylalcohol does not interfere with obtaining the desired electrochemical activity and desired performance of the anode upon cell discharge. (See Applicant's cell performance data in his specification at Tables 1 and 2).

By contrast Kosta does not contemplate pressure molding, that is, inserting a wet zinc mixture into a die mold cavity and then applying pressure to the wet zinc mixture therein and compacting the wet mixture. **Kosta makes no mention of adding polyvinylalcohol to the wet zinc mixture and makes no mention of compacting the wet zinc mixture.** Kosta also does not describe inserting his dry zinc mass into an anode cavity of an alkaline cell and adding electrolyte thereto. But even assume this is his intent, he gives no indication that he could use Applicant's pressure molding technique which compacts the wet zinc mixture. He gives no indication that the use of polyvinylalcohol as an additive to the mixture would make it possible to pressure mold the wet zinc mixture in the manner Applicant has described to result in a molded wet zinc mixture which upon ejection from the mold, retains its shape.

One skilled in the art would need the benefit of Applicant's disclosure to fill in the missing information, namely of **inserting the wet zinc mixture comprising zinc and polyvinyl alcohol into a mold cavity and applying pressure to the mixture therein as**

Applicant has described, thereby resulting in a molded wet zinc mixture which has the property of retaining its shape when ejected from the mold cavity. Such hindsight analysis, however, is inapplicable.

II. Argument Against Reference Kokai JP 56[1981]-116,270

JP '270 DOES NOT DISCLOSE APPLICANT'S STEP OF INSERTING A WET ZINC MIXTURE INTO A MOLD CAVITY AND APPLYING PRESSURE TO THE WET MIXTURE THEREIN TO COMPACT THE MIXTURE AND EJECTING THE COMPACTED WET ZINC MIXTURE FROM THE MOLD CAVITY

JP'270 DOES NOT DISCLOSE DRYING A WET ZINC MIXTURE TO OBTAIN A DRY SOLID ZINC MIXTURE. JP'270 DRIES A WET ZINC MIXTURE TO THE POINT OF FORMING A PASTE-TYPE ZINC AND A PASTE-TYPE ZINC IS NOT A DRY SOLID MASS

JP'270 (full translation submitted herewith by supplemental IDS) is concerned with forming a zinc particle alloy with indium and lead, in situ, while the zinc electrode for a zinc-air cell is being formed. This is alleged to provide an advance over conventional methods of first forming the zinc alloy powder outside of the cell. JP'270 describes such conventional methods cause inefficiencies because the zinc powder must be separately first alloyed before the zinc electrode is formed. Such conventional method also produces waste solutions which must be discarded.

In JP'270 a method is described whereby the zinc powder is alloyed with metals such as indium and lead simultaneously during the formation of the zinc electrode. This is done, as recited in the example, by mixing indium chloride and lead nitrate in water to form an aqueous solution containing 3% lead and 0.1% indium. 12.5g of polyvinyl alcohol is added as thickening agent to 125 cc of this aqueous solution. The mixture is agitated and 500g of zinc powder is added and the mixture again agitated allowing the zinc

to react and become alloyed with the indium and lead present in the solution, whereby a wet paste is simultaneously formed. The wet paste is introduced into a mold and dried to evaporate some water and causing the zinc-indium-alloy powder aqueous mixture to form a paste type consistency with polyvinylalcohol. The reference states that the dried zinc mixture has a **paste type** consistency. **One would conclude from this that it is not dried to a solid mass comprising zinc alloy, since there is no reference to such solid mass of zinc alloy material.** Although not specifically described in the reference the zinc-alloy paste would likely be inserted into the electrode cavity of the zinc-air cell and alkaline electrolyte then added to activate the electrode.

In any event it is clear that JP'270 is preoccupied with forming a zinc alloy powder simultaneously with the formation of **paste-type zinc** which is ready for insertion into the electrode cavity of a zinc-air cell. **While polyvinylalcohol is used in forming the zinc paste there is no disclosure of pressure molding such paste. Specifically there is no disclosure in JP'270 of inserting a wet zinc paste into a mold cavity and applying pressure to the paste thereby compacting the paste within the mold cavity and subsequently ejecting the molded paste from such mold cavity forming a molded wet zinc mixture which retains its shape.**

There is also no step revealed in JP'270 which would lead one of ordinary skill to believe that a dry solid mass of zinc was ever produced at any stage of the processing. There is only reference to the production of a paste-type zinc and a **paste-type zinc** would not suggest Applicant's dry solid mass comprising zinc particles.

**III. Argument Against Reference Kohoku Patent JP 55[1980]-
30,260**

JP '260 (translation earlier submitted by Applicant) describes problems associated with prior art zinc anode mixtures for zinc/air alkaline cells. Such prior art anode mixtures are described as comprising a mixture gel of zinc particles and a viscous substance such as an aqueous carboxymethylcellulose solution or alkaline solution. Such zinc anode mixtures undergo considerable volume change during cell charging and discharging. Another problem is that with long term storage the zinc particles can separate from the dispersion and the degree of contact between zinc particles and the anode current collector can deteriorate.

In order to rectify or alleviate these problems an anode mixture comprising zinc particles uniformly dispersed in an aqueous polyvinylalcohol solution containing 0.01 to 10 mol% of boron oxide or boric acid in terms of polyvinylalcohol is molded and then combined with an alkaline solution to make a gel-like anode dispersion. The polyvinylalcohol crosslinks with the boron in the boric oxide or boric acid. The cross linked polyvinylalcohol imparts good shape retention capability to the gelled anode and may be used instead of viscous gelling agents such as carboxymethylcellulose, polyacrylate, water glass, and the like. The references teaches that in order to provide such shape retention capability the viscous agents such as carboxymethylcellulose and polyacrylate would have to be added in too high concentration, which could lead to reduction in cell performance. The improved shape retention of the gelled zinc anode mixture employing the polyvinylalcohol crosslinked with boron

helps the zinc particles maintain contact with the anode current collector. (Translation, p. 5, lines 12-18)

It is interesting to note that the reference states that although polyvinylalcohol has high ionic conductivity, it is a chain polymer and therefore, makes shape retention difficult and battery life short. (Translation, p. 5, lines 1-5) The implication is that polyvinylalcohol would not help in improving shape retention of the zinc anode mixture and only the polyvinylalcohol crosslinked with boron shows a benefit.

It is noted that there is no teaching in this reference of Applicant's intermediate step of inserting a wet mixture comprising zinc particles into a die mold cavity and applying pressure to the mixture as by the action of plunger thereon to compact the mixture and then ejecting the compacted wet zinc mixture from the mold cavity. Rather JP '260 describes simply that the aqueous solution comprising the zinc particles, polyvinylalcohol, and boric acid was stirred at normal temperature to form a dispersion. And the dispersion was then poured into a nylon nonwoven pouch which was inserted into an anode current collector ring. The pouch was immersed overnight at normal temperature with potassium hydroxide solution. This transformed the zinc dispersion in the pouch into a gel-like dispersion (elastic solid) which retained its shape without changing for two years. Zinc/air cells using the gelled dispersion as anode were discharged and showed good performance.

There is also no step of drying of any wet zinc dispersion disclosed in this reference. Specifically there is no teaching of passing a molded wet mixture comprising zinc particles to an oven to dry the mixture into a solid porous mass as described as a step in Applicant's method. Rather, there was no dry solid porous mass

of zinc particles ever made or disclosed in JP '260 either as an intermediate or final product, only "aqueous zinc dispersion" or "gel-like zinc dispersions" are disclosed.

IV. Argument Against Patent JP 48[1973]-012690

JP '690 (translation submitted herewith by supplemental IDS) discloses a mixture of zinc powder, polyvinylalcohol, and an added acetalizing solution. The added acetalizing solution is a mixture comprising 50 parts by weight methanol, 20 parts water, 22 parts zinc sulphates, and 10 parts formalin. (Formalin contains formaldehyde). This acetalizing solution (30 parts by weight) is then added to a mixed powder of 90 parts by weight amalgamated zinc powders and 10 parts of polyvinylalcohol to form a wet zinc mixture. JP '690 specification recites that this wet zinc mixture is molded under increased pressure to a desired shape and then subjected to heat treatment for 30 minutes at 150° C. During the heat treatment the polyvinylalcohol undergoes partial acetylation causing crosslinking of the polyvinylalcohol at some of the hydroxyl sites in the polyvinylalcohol chain to occur. (Note: Crosslinking would thus occur by reaction of the formaldehyde in the formalin with at least some of the hydroxyl sites along the polyvinylalcohol chain.) After the acetylation the resulting zinc mass was washed with water, with a porous mass being formed.

There is also no description or indication of any particular method of molding the wet zinc mass prior to the heating step to bring about the acetylation (crosslinking) reaction. There is no indication, for example, whether the wet zinc mass was placed in a mold cavity; and, if so, then whether it was ever ejected from the mold after it was shaped to the desired shape. Thus, there is no

indication in this reference that the molded wet zinc mixture could retain its shape if removed from the mold after it was shaped, but before it was heated to bring about the acetylation reaction. The implication is that the wet zinc mass was heated while still in the mold. However, since the reference is silent as to the method of molding, one can only conjecture.

"Silence or missing information" in a reference as to key aspects of the method employed in conducting a process, which leaves one skilled in the art merely to guess at possibilities, should not constitute prior art as to those aspects.

It will be appreciated that this reference depends on a chemical reaction between polyvinylalcohol and formaldehyde which changes the chemical nature of the polyvinylalcohol at least along portions of the polyvinylalcohol chain, and causes crosslinking to occur. The partially acetylated polyvinylalcohol is said to exhibit beneficial binding properties for the zinc particles. Thus, the reference teaches achieving improved binding properties of the polyvinylalcohol as used in a wet zinc mixture, primarily by changing the chemical nature of the polyvinylalcohol, not by exerting pressure on a wet mixture of zinc particles and polyvinylalcohol. In any event, there is no disclosure in this reference that there is any step of molding of the wet zinc mixture as described by Applicant, namely, by inserting a wet zinc mixture comprising zinc particles and polyvinylalcohol into a die mold cavity, exerting pressure on the wet zinc mixture as with a plunger to compact the mixture therein, and then ejecting the compacted mixture from the mold cavity, whereupon the compacted wet zinc mixture retains its shape.

V. Argument Against U.S. Patent 4,563,404 (Bahary)

This reference is directed to gelling an alkaline cell anode, e.g comprising zinc particles, with a gelling agent comprising a hydrolyzed polyacrylonitrile and an alkaline electrolyte. In a specific embodiment the polyacrylonitrile gelling agent may be alkali hydrolyzed as with potassium hydroxide. The zinc particles are mixed with aqueous KOH solution, and hydrolyzed polyacrylonitrile gelling agent (e.g. Waterlock A-400 gelling agent). It will be appreciated that the gelled anode mixture produces a slurry, which is filled into the anode cavity of the alkaline cell. It is clear that the term "slurry" is used to describe the gelled anode mixture which has the consistency of a slurry dispensed into the cell's alkaline cell. (See, e.g., Example 1, at col. 3, line 23).

This reference does not disclose pressure molding the wet anode "slurry" and in particular does contemplate the use of applying pressure to a wet zinc mixture within a die mold cavity to compact the wet mixture therein and then ejecting the compacted wet mixture from the mold cavity, as Applicant has described. There is also no molded dry solid mass of zinc particles disclosed or contemplated in this reference either in the form of an intermediate or end product.

VI. Argument Against U.S. Patent 5,401,590 (Chalilpoyil)

This reference is directed to a gelled anode slurry of zinc particles for alkaline cells, wherein the anode slurry is formulated to inhibit load voltage instability and reduce hydrogen gassing. In order to prepare the improved anode, a slurry mixture of both anionic surfactant and a non-ionic surfactant are added to a mixture of zinc particles, gelling agent and aqueous KOH. As in

the preceding reference, it should be appreciated that the anode product formed is a gelled slurry, but because it is a "slurry" it is a fluid and may be stored in a storage tank and dispensed therefrom as fluid mixture into the cell's anode cavity. (See, e.g. col. 6, lines 43-65)

This reference does not disclose pressure molding the wet anode "slurry" and in particular does contemplate the use of applying pressure to a wet zinc mixture within a die mold cavity to compact the wet mixture therein and then ejecting the compacted wet mixture from the mold cavity, as Applicant has described. There is also no molded dry solid mass of zinc particles disclosed or contemplated in this reference either in the form of an intermediate or end product.

VII. Argument Against U.S. Patent 5,240,793 (Glaeser)

This reference is directed to an improved zinc powder for alkaline cells, wherein the improvement is that the zinc powder may be alloyed with indium and bismuth. The zinc alloy powder is particularly beneficial in the context of alkaline cells which are substantially free of mercury. The zinc powder alloyed with indium and bismuth retards gassing, which would otherwise tend to occur at a greater rate in alkaline cells which are free or substantially free of mercury. The indium is included in the alkaline cell in amount between about 10 and 1000 ppm and bismuth in amount between about 10 and 1000 ppm, based on the weight of zinc. The zinc powder alloyed with indium and bismuth also allows for reduction of lead content in the cell to less than 30 ppm.

The reference is not concerned with molding of the zinc anode. In particular the reference does not describe or contemplate the use of applying pressure to a wet zinc mixture

within a die mold cavity to compact the wet mixture therein and then ejecting the compacted wet mixture from the mold cavity, as Applicant has described. There is also no molded dry solid mass of zinc particles disclosed or contemplated in this reference either in the form of an intermediate or end product.

VIII. Argument Against U.S. Patent 4,195,120 (Rossler)

This reference discloses that a surfactant, which is an organic phosphate ester, may be effectively added to electrolyte for the alkaline cell such as a Zn/MnO₂ alkaline cell. The electrolyte may typically be aqueous potassium hydroxide. The anode mixture would thus comprise a slurry of zinc particles, aqueous electrolyte, gelling agent, and surfactant comprising an organic phosphate ester. The addition of the organic phosphate ester, e.g. GAFAC RA600 organic phosphate ester, was determined to inhibit the rate of production of hydrogen gassing in the cell.

This reference is not concerned with the molding of a zinc anode mixture and in particular does not disclose or contemplate the use of applying pressure to a wet zinc mixture within a die mold cavity to compact the wet mixture therein and then ejecting the compacted wet mixture from the mold cavity, as Applicant has described. There is also no molded dry solid mass of zinc particles disclosed or contemplated in this reference either in the form of an intermediate or end product.

IX. Argument Against U.S. Patent 4,777,100 (Chalilpoyil)

This reference is directed primarily to the use of single crystal zinc particles in alkaline cell anodes. The single crystal zinc particles as described may be used in conjunction with small

amounts of gas inhibiting surfactant, for example, organic phosphate esters. When such single crystal zinc particles are used in the anode together with the gas inhibiting surfactant, a lower rate of cell gassing and zinc corrosion is obtained in alkaline cells which may even contain reduced amount of mercury.

The reference is not concerned with molding of anode materials for alkaline cells. There is no disclosure or contemplation of pressure molding a wet zinc mixture. In particular the reference does not describe or contemplate the use of applying pressure to a wet zinc mixture within a die mold cavity to compact the wet mixture therein and then ejecting the compacted wet mixture from the mold cavity, as Applicant has described. There is also no molded dry solid mass of zinc particles disclosed or contemplated in this reference either in the form of an intermediate or end product.

X. Argument Against U.S. Patent 5,538,813 (Li)

This reference is directed to an electrochemical storage device having asymmetric electrodes and an electrolyte which may include polyvinylalcohol (PVA) to provide a support structure for an electrolyte active species which may be an acidic or basic. The first electrode may be, for example, fabricated from polyaniline. The second electrode may be fabricated from ruthenium dioxide (RuO₂) (Example 1). Specifically, the PVA is indicated as providing a good polymer support structure into which may be incorporated an electrolyte active species, which may include a base such KOH, NaOH, or LiOH. The PVA is described as being available commercially in a preferred range of molecular weights between about 80000 to 140000 for the electrolyte support

structure. Other molecular weights of PVA such as 30000 to 50000 or 50000 to 80000 are also indicated as useful. A preferred polymer support structure for the electrolyte active species is described as a PVA polymer support with H_3PO_4 incorporated therein. A method of making such a PVA/ H_3PO_4 polymer support for the electrolyte is described for example at col. 3, lines 55-64.

The use of PVA as an electrolyte additive is disclosed in the reference and a range of molecular weights for the PVA are recited which overlap Applicant's range as recited in Applicant's dependent claim 31. However, Applicant's claims 23-41 are directed to a method of forming an anode involving the molding steps as recited in Applicant's amended independent claim 23. This reference is not concerned with and does not contemplate Applicant's method of preparing and molding a zinc anode mixture as recited in Applicant's amended independent claim 23.

XI. INDEPENDENT CLAIM 23 AS AMENDED HEREIN IS PATENTABLE UNDER 35 USC 103(a) OVER KOSTA U.S. 3,784,406 IN VIEW OF EITHER JP 48-012690 (JP '690) OR JP PATENT 55(1980)-30,260 (JP'260) AND U.S. 6,251,539 (BRYN) AND EITHER U.S. PATENT 4,563,404 (BAHARY) OR U.S. PATENT 5,401,590 (CHALILPOYIL)

The references Kosta '406, JP '690 and JP '260 each discloses some form of molding a mixture of zinc particles as discussed, supra. However, none of these references discloses or contemplates any step of molding of the wet zinc mixture as described by Applicant, namely, by inserting a wet zinc mixture comprising zinc particles and polyvinylalcohol into a die mold cavity, exerting pressure on the wet zinc mixture to compact the mixture therein, and then ejecting the compacted mixture from the mold cavity. Furthermore, none of the references teaches that such

compacted wet zinc mixture, as Applicant describes, can retain its shape after ejecting said compacted wet mixture from the mold.

JP'690 and JP '260 which the Examiner has applied against claim 23, discloses inclusion of polyvinylalcohol into a wet anode mixture comprising zinc particles. (Similarly, JP 56[1981]-116,270) not specifically cited against independent claim 23, discloses inclusion of polyvinylalcohol into the zinc anode mixture for alkaline cells.) **However, none of these references discloses or contemplates Applicant's intermediate step of inserting a wet zinc mixture comprising zinc particles and polyvinylalcohol into a die mold cavity, exerting pressure on the wet zinc mixture to compact the mixture therein, and then ejecting the compacted mixture from the mold cavity, whereby the compacted wet mixture retains its shape.**

The references U.S. 6,251,539 (BRYN), U.S. PATENT 4,563,404 (BAHARY) and U.S. PATENT 5,401,590 (CHALILPOYIL) as above described are concerned with zinc anode formulations for alkaline cells and are not concerned with molding of zinc anode mixtures and certainly do not disclose or contemplate Applicant's intermediate steps of molding a wet zinc mixture as described by Applicant, namely, by inserting a wet zinc mixture comprising zinc particles and polyvinylalcohol into a die mold cavity, exerting pressure on the wet zinc mixture to compact the mixture therein, and then ejecting the compacted mixture from the mold cavity. Applicant has now specifically amended independent claim 23 to recite these intermediate processing steps.

One of ordinary skill in the art would need the benefit of Applicant's disclosure to supply this missing information, that is, Applicant's intermediate steps of molding a wet zinc mixture by inserting a wet zinc mixture comprising zinc particles and

polyvinylalcohol into a die mold cavity, applying pressure on the wet zinc mixture to compact the mixture within the mold cavity, and then ejecting the compacted mixture from said mold cavity, whereupon said molded wet mixture retains its molded shape as now recited in amended independent claim 23.

Such hindsight analysis, however, is inapplicable. Applicant's disclosure cannot be used as a blueprint to reconstruct the claimed invention from the isolated teachings of the prior art. Grain Processing Corp. v. American Maize-Products Co., 5 USPQ2d 1788, 1792 (Fed. Cir. 1988). See also, In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). One "cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." In re Fritch, 23 USPQ2d 1780, 1784, (Fed. Cir. 1992) quoting In re Fine, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988).

Applicant's amended independent claim 23 is thus believed patentable over the cited references, since none of these references contemplate Applicant's intermediate steps as above stated with respect to the described method of molding the wet zinc mixture. **In particular, none of the cited references alone or in any combination suggests the inclusion of these intermediate steps into the fabric of the method of producing an active zinc anode inserted in a cell's anode cavity as reflected in amended claim 23.**

Applicant's disclosure would have to be relied upon to supply this missing information in the context of the process of the invention as now reflected in amended base claim 23. Such hindsight analysis, however, is inapplicable. The rejection of

claim 23 under 35 USC 103 is thus believed traversed and withdrawal of the rejection is respectfully requested.

XII. Applicant's Claim 31 is patentable under 35 USC 103(a) over Kosta ('406) in view of JP '690, JP '260 and U.S. patent 6,251,539 (Brys), U.S. patent 4,563,404 (Bahary), and U.S. patent 5,401,590 (Chalilpoyil) as applied to claim 23 above, and further in view of U.S. patent 5,538,813 (Li).

Patentability of amended independent claim 23 has been argued, supra. Claim 31 depends from independent claim 23. The added reference Li, as above discussed, discloses use of polyvinylalcohol (PVA) as an electrolyte additive. Li discloses a polymer support comprising PVA, preferably PVA with H_3PO_4 incorporated therein which functions as polymer support for electrolyte active species such as KOH, NaOH, or LiOH. Applicant's claim 31 recites a molecular weight range for the PVA which, per se, overlaps the Li disclosure. Li, however, does not disclose or contemplate Applicant's method of preparing and molding a zinc anode mixture as recited in amended claim 23. Amended independent claim 23 is believed patentable over the references Kosta, JP '690, JP'260, Brys, Bahary, and Chalilpoyil as above argued. Dependent claim 31 reflects a specific embodiment of the invention and further restricts the subject matter of claim 23. Therefore, claim 31 should be deemed patentable if amended claim 23 is allowed. The above rejection of claim 31 is believed traversed and withdrawal of the rejection is requested upon the Examiner's reconsideration.

XIII. Applicant's Claim 37 is patentable under 35 USC 103(a) over Kosta in view of JP '690, JP '260 and U.S. patent 6,251,539 (Brys), U.S. patent 4,563,404 (Bahary), and U.S. patent 5,401,590 (Chalilpoyil) as applied to claim 23 above, and further in view of U.S. patent 5,240,793 (Glaeser).

Patentability of amended independent claim 23 has been argued, supra. Claim 37 depends from independent claim 23. The

added reference Glaeser discloses that zinc particles may be alloyed with indium. Applicant's dependent claim 37 recites that the anode mixture may comprise indium in amount which overlaps with that disclosed in the Glaeser. The reference Glaeser, however, does not disclose or contemplate Applicant's method of preparing and molding a zinc anode mixture as recited in amended claim 23. Amended independent claim 23 is believed patentable over the references Kosta, JP '690, JP '260, Brys, Bahary, and Chalilpoyil as above argued. Dependent claim 37 reflects a specific embodiment of the invention and further restricts the subject matter of claim 23. Therefore, claim 37 should be deemed patentable if amended claim 23 is allowed. The above rejection of claim 37 is believed traversed and withdrawal of the rejection is requested.

XIV. Applicant's claims 38-39 are patentable under 35 USC 103(a) over Kosta in view of JP '690, JP '260 and U.S. patent 6,251,539 (Brys), U.S. patent 4,563,404 (Bahary), and U.S. patent 5,401,590 (Chalilpoyil) as applied to claim 23 above, and further in view of U.S. patent 4,195,120 (Rossler) and U.S. patent 4,777,100 (Chalilpoyil '100).

Patentability of amended independent claim 23 has been argued, supra. Claim 38-39 depend from independent claim 23. Applicant's claims 38-39 recite that surfactants such as organic phosphate esters may be included in the zinc anode mixture. The added reference Rossler and (Chalilpoyil '100) disclose use of surfactants, such as organic phosphate esters, for inclusion into zinc anode mixtures. Amended independent claim 23 is believed patentable over the references Kosta, JP '690, JP '260, Brys, Bahary, and Chalilpoyil as above argued. Dependent claims 38-39 reflect a specific embodiment of the invention and further restricts the subject matter of claim 23. Therefore, claims 38-39 should be deemed patentable, if amended claim 23 is allowed. The

above rejection of claim 38-39 is believed traversed and withdrawal of the rejection is requested upon the Examiner's reconsideration.

Remaining dependent claims within the group of claims 24-41 of record not specifically argued herein all depend either directly or indirectly from main claim 23. These claims all reflect specific embodiments of the invention which further restrict the main claim 23 and should be allowable if amended main claim 23 is allowed. Allowance of the dependent claims is requested upon the Examiner's reconsideration.

XV. New Claim 76 dependent on base claim 23 is specifically patentable, since none of the cited references discloses the range of pressure applied to the wet zinc mixture in the mold cavity to compact the wet mixture therein, as recited in claim 76.

A new claim 76 dependent on independent claim 23 has been added. Claim 76 recites that the pressure applied to said wet mixture as recited in claim 23 (step a.2) corresponds to a force of between about 10 and 300 pounds applied by a plunger to said wet mixture in a cylindrical mold cavity having a diameter between about 3 and 7 mm, thereby compacting said wet mixture within the mold cavity. (Support in the specification appears at p. 19, lines 2-8 and Figs. 1 and 3B)

As above argued none of the cited references discloses or contemplates the use of applying pressure to a wet zinc mixture within a die mold cavity to compact the wet mixture therein and then ejecting the compacted wet mixture from the mold cavity, as Applicant now recites in independent claim 23, wherein the compacted wet zinc mixture retains its shape. Now, furthermore, none of the cited references alone or in any combination can be

said to disclose or contemplate the specific pressure range applied to the wet mixture in said mold cavity as recited in new claim 76. Accordingly, new claim 76 is believed to be specifically patentable and allowance of claim 76 is requested upon the Examiner's reconsideration of the application.

XV1. Claims 33 and 34 dependent on base claim 23 recite preferred gelling agents which function as a supplement binder in conjunction with the polyvinylalcohol. In the context of Applicant's method recited in claim 23, claims 33 and 34 should be specifically patentable, along with claim 23.

Claim 33 recites inclusion into the wet zinc mixture (before compaction) of a gelling agent comprising a crosslinked acrylic acid polymer (CARBOPOL C940 gelling agent is representative). Claim 34 recites inclusion into the wet zinc mixture (before compaction) of a gelling agent comprising a starch graft copolymer of polyacrylic acid and polyacrylamide (WATERLOCK A221 gelling agent is representative).

The Examiner has correctly pointed out that gelling agents are commonly added to zinc anode mixtures for alkaline cells. The term "gelling agent" is commonly used and understood in the art of zinc anode mixtures for alkaline cells. (See, Applicant's Background discussion, Specification at p.2, lines 2-8). The above indicated gelling agents, per se, are known in the art for inclusion into a zinc anode mixture for alkaline cells. (See, e.g. Brys, U.S. 6,251,539 as the Examiner has cited.) However, in Brys the gelling agent is admixed with zinc particles and aqueous electrolyte (aqueous potassium hydroxide) to form a gelled or semi gelled slurry having the consistency of a heavy fluid, which is dispensed directly into the alkaline cell's anode cavity. That is, in Brys, the anode mixture comprising zinc particles is premixed

with both gelling agent and alkaline electrolyte present before the anode mixture (slurry) is inserted into the cell's anode cavity. Such heavy gelled slurry is difficult to dispense. Applicant, by contrast, forms a wet zinc mixture which includes zinc particles, polyvinylalcohol, gelling agent, and water. **But since there is no aqueous electrolyte present yet in the wet zinc mixture, the gelling agent is not yet fully activated. Thus, Applicant's wet zinc mixture becomes easier to dispense than Brys anode slurry mixture.** In Applicant's method the wet zinc mixture is compacted in a mold by applying pressure thereto, and retains its shape when it is ejected from the mold in compacted state. In Applicant's method, a dry solid mass comprising zinc is formed from the molded wet zinc mixture by heating the compacted wet zinc mixture after it has been ejected from the mold. The dry solid mass comprising zinc particles is inserted into the cell's anode cavity (claim 23, step c) and then subsequently the activation fluid (alkaline electrolyte as in claim 24) is added, whereupon the gelling agent becomes activated to form the gel-like slurry, in effect forming the active anode. (Applicant's specification e.g. at p.24, lines 2-16)

In sum, Applicant is seeking to patent method claims depicting a method comprising steps of pressure molding a wet zinc mixture producing a compacted wet zinc mixture comprising zinc particles, polyvinylalcohol, gelling agent and water, but the gelling agent is not yet activated in the wet zinc mixture because alkaline electrolyte has not yet been added. The compacted wet zinc mixture retains its shape upon ejection from the mold. The compacted wet zinc mixture is heated to result in a dry solid mass comprising zinc particles. Claims 33 and 34 reflect the inclusion of specific types of gelling agents during preparation of the wet zinc mixture along with inclusion of polyvinylalcohol. **The gelling**

agents become activated upon adding the activating fluid (alkaline electrolyte) to the dry solid mass comprising zinc particles. The activated gelling agents help absorb the electrolyte and causes the dry solid mass comprising zinc particles to expand after said dry solid mass is inserted into the cell's anode cavity and after alkaline electrolyte is subsequently added thereto. (Applicant's specification at p. 24, lines 11-16). Claims 33 and 34 thus reflect specific embodiments of the invention which enhances the performance of the molded product.

There is nothing in the references (including consideration of Brys) to suggest any benefit of employing both polyvinylalcohol and the above named gelling agents (claims 33 and 34) in a wet zinc mixture and molding the wet zinc mixture by the sequence of steps as recited in Applicant's base claim 23, 33 and 34 achieving a compacted wet zinc mixture, which retains its shape upon ejection from the mold cavity.

The Court has consistently held that under section 103 teachings of references can be combined only if there is some suggestion or incentive to do so. (Emphasis the Court's.) ACS Hospital Systems, Inc. v. Montefiore Hospital, 221 USPQ 929 at 933 (CAFC 1984). It is impermissible to reconstruct the claimed invention from selected pieces of prior art absent some suggestion, teaching, or motivation in the prior art to do so. See, C.R. Bard, Inc. v M3 Sys., Inc., 48 USPQ 2d 1225 (Fed. Cir 1998). There is no teaching or suggestion in the cited references, including consideration of Brys, of combining various elements therein to arrive at Applicant's claimed method steps as recited in amended base claim 23 and as further specifically recited with the limitations of claims 33 and 34.

Accordingly, claims 23, 33 and 34 should be specifically patentable under 35 USC 103 in view of any of the cited references, whether viewed alone or in combination. Allowance of these claims is specifically requested upon the Examiner's reconsideration.

Applicant encloses herewith a set of formal drawings under cover of separate letter addressed to the Examiner.

Applicant has made the claims Amendment with every effort to place the application in condition for allowance. Formal allowance of the Application is respectfully solicited.

The undersigned attorney solicits a telephone call from the Examiner to clarify any questions which the Examiner may have concerning the application. Authorization is hereby given to debit Deposit Account 502271 for any amount owing or credit the same account for any overcharges in connection with this communication.

Date: June 28, 2006

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Respectfully submitted,



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